THE MARINE RECORD.

DEVOTED TO COMMERCE, ENGINEERING AND SCIENCE.

VOL. VII. NO. 5. CLEVELAND, O. JANUARY 29, 1885. $2.00 PER ANNUM SINGLE COPIES 5 CENTS

AROUND THE LAKES.

CLEVELAND.

Captain A. M. Graves and Captain T. Wilford, late master of the steamer J. M. Osborne, are in Detroit as witnesses in the suit now in progress there of the J. M. Osborne vs. the steamer Alberta.

Engineer Force has recomended the rebuilding of Main Street Bridge, estimating the cost at $40,000. The communication was referred to the Committee on Legislation to prepare the necessary bill for the issue of bonds.

The schooner John Burt, Captain J. E. Gotham, while lying in the old river bed, will have considerable repair work done this winter by the Globe drydock, which will include new quarters, new bowsprit, catheads, jibboom, deck beams, deck frame on one side and some new ceiling.

Captain George M. Dennis, master of the schooner Ishpeming, and Miss Lizzie S. Sweet, were married at the home of the bride's parents, at Watertown, N. Y., on Wednesday the 28th inst. We wish the contracting parties much joy, and a long and happy cruise, hoping, however, that their ship may come in well freighted at the end of each season.

The trial of a suit brought by Mr. Patrick Smith against Monroe Brother s& Co. and the S. S. Stone estate was begun before Judge Heisley and a jury, in Court Room No. 5. Mr. Smith constructed a dock for Monroe Brothers & Co. along the river at their lumber yard. The bill for the work amounted to $11,025.25, of which $4,716.60 was paid, leaving a balance of $6,308.66, for which the suit was brought.

The Board of Superviving Inspectors of Steam Vessels have adopted a rule of importance to steamboat owners. It provides that where steamers are furnished with approved life saving mattresses, such mattress may be used in lieu of life preservers in the proportion of one peson to a single mattress, and two persons to a double mattress, thus saving steamboat owners the expense of purchasing life preservers in proportion as their steamers are fitted out with life saving mattresses.

The case of the propeller J. M. Osborne vs. the propeller Alberta came up for hearing before Judge Brown at Detroit last Friday, and it is thought that it will be concluded this week. The case is attracting much interest in marine circles and the court room has been filled every day since it begun. As the owners of the Osborne have a strong case and as they are well prepared with the ducats necessary to back it up, it is the general opinion of lake men that they must win. It is possible that the testimony of the master and crew of the Alberta will off set the testimony of the master and crew of the Osborne regarding the movements of each boat, but there is a strong volume of outside, disinterested testimony that will have great weight, especially that of the masters of steambarges, who, starting hours after the Osborne for their destination, overhauled and heard the signals given by the Osborne, just previous to the disaster. The facts heretofore adduced, warrant us in saying that the justice of the case is without doubt in favor of the Osborne. One of the members of the firm of H. J. Webb & Co. is in attendance at the trial and the case is under the management of H. D. Goulder, Esq., of this city, who has associated with him Mr. Swann, of Detroit. Mr. Goulder, who has been a sailor man, is enabled to place before the judge, in a graphic manner, the relative positions of the boats and detail their movements in a logical way that must have weight with the court.

Captain S. A. Murphy of Detroit, the well known wrecker, is in the city today.

The steambarge Erin has been towed inside at Lac la Belle, and does not appear to have suffered much damage.

The ferry steamer, running between St. Ignace and Mackinaw City, has been laid up at St. Igance and a stage coach put on the route.

Mr. B. Whittaker, vessel owner and shipbroker of Detroit is in the city visiting with relatives, Messrs Thomas and John Fitz patrick.

The steambarge Ohio, Captain Estes, has been chartered, with same conditions, by the Baltimore & Ohio rail road at Sandusky to run between Duluth and Sandusky.

Captain Jay Hursley of Pequaming, informs us that the RECORD of the 22nd. inst. was mistaken in noting the sale of the tug J. C. Morse to Captain Mills of Detroit. He says that she has not been sold and that she is not for sale. We regret that our correspondent was missinformed.

Captain C. E Benham, who has returned from his mission of inspecting the schooner Harvey Bissell, ashore at the mouth of Carp river, reports her in good condition, well up on the beach, on a sand bottom and with very little water under either end; that she is not injured much, but that the backing to her rudder is gone; if she is worked with early in the spring there is a good show of getting her off in good shape. Her rigging is stored in a warehouse on the dock and one of her anchors, which had not been let go, was still hanging at her bows.

MILWAUKEE.

Special to the Marine Record.

Jan. 19.—The weather has been the coldest this day, of any day this season.

The laborers at work on the United States steamer Andrew Johnson succeeded in removing her boiler from the boat to the dock, where it lays ready to be removed to the boiler shop. The new one will be ready to transport to the boat in a few days.

The boiler makers commenced work on the tug Leviathan, cutting off the water bottom, which they will replace with new legs instead of the old style water bottom.

Jan. 20.—The city water pipes froze up at the mouth in the lake, at a distance of one mile and a half from shore, and the city engineer was compelled to telephone for the tug John Evenson to break her way through the ice to the piers in the lake and attach a steam hose from her boiler to the pipes, and after considerable trouble and seven hours' steady steam pressure against the pipes, the work was accomplished and the tug returned to the harbor. The ice about the water works pier was very thick, and after the tug had broken it up, the wind being from off land, it drifted away for the time being.

The ice is so heavy in the river that the railroad company's steamboats have a hard time getting through.

Jan. 21.—There is not much left of the old tug Goodnow, which is still in Wolf & Davidson's drydock. The engine is being removed and also the rudder, wheel and shaft. The boiler was placed on the dock and alongside of the old propeller Truesdell's boiler, which has been lying on the dock ever since the old Truesdell was rebuilt and renamed the John Otis.

I see that the ship carpenters are at work tearing out the decks of the Andrew Johnson to-day.

A look into Sheriff's shop shows that the new engine which they are building for Chipman & Raesser's new barge is fast nearing completion, and will be ready long before the hull is finished.

Jan. 22.—Captain John Gorman, of the tug S. S. Coe, has just returned from New Orleans, where he has been since the close of navigation. He reports that there is nothing but rain and mud, and the excursion boats are running in debt, as it is overcrowded with this class of boats from all over the country.

The tug John Evenson created considerable excitement along the river to-day, cutting out of the ice and towing the city lighter from the old harbor to the wood yard, to be loaded with wood to be used at the new pumping works.

The propeller Jay Gould, recently chartered to take the place of the wrecked F. & P. M. No. 1, is expected here to take her place on the Milwaukee-Ludington route. Her delay is caused by the heavy ice at the Chicago piers. The F. & P. M. No. 1 lies just outside of the piers at Ludington. She was boxed up on Friday last all ready to be pumped out, but the boxing was completely destroyed by the ice. The boat has been photographed as she lies in her icy couch, the view presenting a beautiful and weird winter scene.

The attempt of the tug Arctic to force a passage for the propeller Michigan, fast in the ice off Grand Haven, was unsuccessful, as the ice was found to have grounded on the bar, and being fully ten feet thick, the tug could have no effect on it. The propeller Oneida remained in the ice six miles north of the Haven, and was well protected from any danger, while the Wisconsin was awaiting a favorable opportunity to leave Grand Haven for this port. From the Grand Haven piers as far as the eye could reach, extended the ice-field, with small icebergs visible in all directions. The wind Monday afternoon was southeast and brisk, and, should it go to the eastward the ice-field would be moved lakeward and thus free the imprisoned boats.

Jan. 26.—A dispatch received by the agent of the Grand Haven propellers states that the propeller Oneida has drifted with the ice as far as Montague, and about twenty miles out in the lake, and the ice is piled up and grounded on the bar outside of Grand Haven harbor. X. Y.

GRAND MARAIS.

Special to the Marine Record.

The Morley, ashore at Grand Marais, is in good shape; is not injured much and lays close in to the new breakwater, and is well protected by ice piled up on the outer bar. The deckload of grain was run overboard last fall. If she is looked after early in the spring she can be got off with little difficulty. Captain Murphy has two pumps set upon her.

The river tug Andrew J. Smith and the harbor tug Wright are at Grand Marais.

PORT HURON.

Captain Ed. Thomas has been promoted to the command of the steamer Omar D. Conger, with the genial and jocular Captain Curtis in charge of the wheel.

CHICAGO.

Special to the Marine Record.

The elevators are not filling up very fast, and no charters have been made for nearly three weeks.

The tug T. T. Morford last Friday took two divers to the water works cribs off the towns of Lake and Hyde Park; the tug broke the ice and the divers went down and cleared the ice from the sieves, so as to give the water an inlet.

Very little is being done at the ship builders' yards and docks; the severe cold weather prevents the men from working.

The only arrival at this port since our last issue was the Goodrich Company's propeller Depere which arrived on Monday from Manitowoc and other west shore lake ports. Captain Stines reports that there is a large quantity of ice in Lake Michigan.

A splendid new spear, gilded and painted red, white and blue, has been made for the steam barge Albert Soper, by R. Chester of of 248 South Water Street.

Captain C. E. Benham, of the firm of Palmer & Benham, vessel agents, Cleveland, was in this city last Friday, having returned from Lake Superior, where he had been to see the Harvey Bissell, ashore near Marquette; he reports her in good shape and arangments will be made to get her off the beach early in the spring.

H. Mills, shipbuilder, Buffalo, was in this city last Saturday visiting his friends.

Miller Brothers, shipbuilders, ironed the propeller Jay Gould with No.8 iron plates before she started for Milwaukee.

The tug T. T. Morford towed the propeller Jay Gould from the North Branch on Tuesday evening. The Gould is commanded by Captain Hugh Clark. John Twikell is first mate, William Ponsonby first engineer, F. McLaren second engineer, J. Numer steward. She goes to Milwaukee to take the place of the F. and P. M. No. 1.

The wheel, shaft and rudder have been taken out of the wreck of the tug Admiral by W. Harman.

Captain John Martin of Buffalo is here surveying the vessels in the Chicago district on behalf of the marine underwriters, Captain Frank Higgie of this port is assisting him.

The tug T. T Morford will as soon as the weather permits take along the steam pump which was used to pump the coal from the wrecked shooner Wells Burt, to the new Water Work Crib off Hyde Park and pump out the sand and clay out of the crib.

The propeller D C. Whitney of Detroit is being converted into a double decker. This will be a great improvement and will give her a 23 foot hold. R. Cuson, superintendent of the Whitney Line, and Stephen Langston, shipbuilder, are here from Detroit getting the work done.

The tenth annual ball of the Marine Engineers' Beneficial Association, No. 4. was given at Brand's Hall, corner of Clark and Erie streets. The Chicago association is one of the largest in the order, having upon its rolls all the lake engineers west of Detroit. The officers are: President, James Burk; Vice President, John Murphy; Treasurer, William Ponsonby; Financial Secretary, D. W. Wise; Recording Secretary, John McAuley; Corresponding Secretary, T. F. Dowd; Chaplain, Joseph Quinn; Conductor, F. W. Whitehouse; Door-keeper, John Gallagher. The ball last evening was attended by 150 couple. T. W.

MARITIME LAW.

KEITH-KELLOGG CASE.

In the case of William G. Keith, owner of the schooner Ida Keith, against the Michigan Navigation Company, owners of the tug Charles Kellogg, the libelant sought to recover damages for injuries sustained to the Keith while passing down the St. Clair canal in tow of the Kellogg. The Kellogg in answer to the signal of the tug Graves bound up her right of way and crossed over from the starboard to the port side of the canal with the Keith in tow and schooner Steele astern of the Keith. She grounded the Keith on the east bank, and the Steele having the lighter draught ran into and damaged the Keith's stern about $1,565 worth. The court held that the Kellogg had no right to abandon the usual side of the channel going down, and that if she had retained her own side no collision would have occurred, and also that the tow was improperly arranged in putting the lighter draught vessel astern instead of the Keith. Further that there was no evidence to show the Keith failed to follow her tug. Another defense was that there was an unknown obstruction where the grounding took place, but the court held that the evidence did not disclose any unknown obstruction and even if such did exist the tug would still have been to blame for not placing the Steele ahead of the Keith in tow, which would have avoided any damage in case she grounded. Decree for libelant for $1,565 and costs. William H. Condon for libelant and Miller, Lewis & Judson for defense.

TEMPEST, BOSCOBEL, AND PESHTIGO COLLISION.

The case to T. Stuart White and others, owners of the propeller Tempest, against the Peshtigo Company, owners of the propeller Boscobel and the barge Peshtigo, was a libel filed for a collision about seven miles north of Chicago harbor on the morning of October 1, 1882, between the Tempest and barge Peshtigo. The weather was very foggy. Both the propellers were sounding their whistles, but their barges Peshtigo and Advance in tow of the Boscobel were not sounding their horns. The libelants claim that the Boscobel violated rule 19 of the sailing regulations in not passing the Tempest port and port, after hearing her on her own starboard bow. The Tempest did not discover the Boscobel until she was within 400 feet of her and when heading right for the amidships. She started to go under her stern, and when nearly there she discovered her towline leading to the Peshtigo. She then started to swing clear of the latter, and when the Peshtigo hove in sight she found that her course was to eastward of that of the Boscobel, and that the starboard wheel would not clear her. The Tempest then stopped and backed, but too late, and she collided with the Peshtigo, with a damage of about $2,000 to the Peshtigo. The court found that the Boscobel violated rule 19; that the Peshtigo should have blown her fog horn and kept in the course of the propeller, and that the Tempest was at fault for running at full speed. The damages were, therefore, equally divided between the three vessels. Messrs. Schuyler & Kremer appeared for the libelants and Jewett, Norton & Jewett and William H. Condon for the respondents.

A case exciting some interest in marine circles, relating to the question whether the islands at the west end of Lake Erie are in the customs district of Miami (Toledo) or that of Sandusky, was recently decided by Judge Welker the United Stares circuit court in favor of the former.

The first craft ever built on this side of the Atlantic was launched upon the bosom of the broad Kennebec, a river clear and wide and which hardly ever freezes. She was a two-masted schooner of thirty tons register, built by the Popham colony in 1607, and named Virginia, for carrying them to the sunny south in the winter of that year.

To Bath belongs the honor of having built the first steam whaler, the Mary and Ellen, for Captain Wm. Lewis, of New Bedford, Mass., a bark of 420 tons register, and costing $65,000, from Goss & Sawyer's yard. She was afterward sold to the government for $100,000, to go on the Jeannette relief expedition under the name of Rodgers. While in the Arctic she took fire and was consumed till she sank to rise no more.

THE FIRST STEAMSHIP AGAIN.

A study of the story of human progress, and of the melancholy way in which mankind have treated the men whose discoveries and inventions have led to that progress, suggests no more natural and just reflection than that of Bildad: "We are but of yesterday, and know nothing." The story of Denis Papin will well point this inspired reflection; and may help to a lowlier thought of self in this self-sufficient conceited age.

Whatever may be the claims of John Fitch, Robert Fulton and others to the credit of having first made steam a practical power in navigation, it is certain that the first actual steamboat sailed down the river Fulda in the year 1707, bringing its voyage to a disastrous end at the junction of that river with the Weser. This wreck was the work neither of storm nor eddy, nor of any hostile forces of nature. It was wrought by forces springing from the evil in human nature itself, far more inimical to the progress of humanity than any adverse influences which weaklings bewail in the external world. This first steamboat was broken up by the selfishness and prejudice of a trades-union of boatmen, who had the satisfaction of delaying the progress of steam navigation for at least a century. They had their reward, such as it was; but their stupid victory and the misery of their victim—the constructor of the boat—together form a tragic picture impossible to contemplate without some useful lessons and possibly inspirations of patience.

The builder of this primitive steamboat was Denis Papin, a French Protestant, who had wandered thus far from his native home in Blois, after vainly seeking in London and in Venice an opportunity for developing his mechanical genius. His family had been Protestants for more than one generation, stern Calvanists in a time when nonconformity required some hardness of fibre. He was born in the year 1647, nearly twenty years before the fire of persecution was kindled that blasted for generations the noblest fruits of French genius in science and in commerce. His father was a physician, and Denis was intended for the same profession. It could not have been very profitable to his father, for in 1669, when the young man passed his examination at the Protestant Academy of Angers, he was unable to pay his fee, and was indebted to the faith of his examiners, who trusted him to pay it when he could. It is said that he practiced as physician for two years. Whether his profits enabled him to pay his trifling debt we do not know; but they could not have been very large, for he gratefully accepted an offer of the celebrated philosopher, Huygens, to come to Paris and act as his assistant. Here he obtained the post of curator, or experimentalist, or both combined, under the recently established French Academy.

One of the first objects of research proposed by Huygens to his colleagues was the weight of the atmospheric air, and the mechanical effects to be obtained by means of a vacuum. In 1674 Papin published a little book detailing his experiments on this subject. This was brought to the attention of the minister, Colbert. He, however, looking upon it only as a description of curious recreations or scientific trifling, regarded it as possessing no interest for practical men. The fact that this "trifling" suggested the first germs of the mechanical might that has revolutionized the face of the earth, ought to be a warning to similarly "practical" men in this day of the nineteenth century.

In the following year, 1675, Papin went to London. The reason of the change is not known, but in all probability it was connected with his religous position. A young man stigmatized as a heretic could scarcely be happy in a society where Romanism was one of the essentials of respectability. Huygens himself, though not particularly scrupulous upon the subject, found his position intolerable, and in a few years afterward withdrew to Holland. The young Frenchman carried with him to London letters to Robert Boyle, the most prominent among the founders of the Royal Society. After some little time, passed not without pecuniary embarrassment, Papin was engaged by the Royal Society in a position somewhat similar to that which he had occupied in the French Academy. In this position Papin contentedly remained for several years, during which he continued his experiments on the weight of the atmosphere, and also on the powers of steam. During this period he invented a sort of boiler, or digester, which, by means of superheated steam, extracted every particle of nourishment from bones and other materials not directly digestable by the human stomach.

This was the only invention of his that ever came into general use, but it does not appear that he himself gained any considerable profit from it. The most interesting feature in it was the safety valve, which in its essential principles was the same as that afterward applied to steam-engine boilers. In 1681 he went to Venice, apparently at the solicitation of the Venetian ambassador; but not gaining anything by the change, he returned to his old position in England three years afterward.

About this time he produced a scheme for conveying to a distance the mechanical power of falling water. In our day we are told that this is impossible by means of electricity. But Papin's idea was to make the falling water work an air-pump of his own invention, by means of which a vacuum was created in a long tube extending to the scene of operations. The pressure of the air through this tube, on the principle afterward applied to the atmospheric railway, was the power by which he produced the mechanical motion required. The working of his scheme was exhibited in London; but, the machinery had not been well constructed its operation was defective, and the consequence was disappointment and failure.

Another change was affected in his fortune which gave the promise at least of additional dignity, through not of wealth. In the picturesque little town of Marburg, in Germany, a small colony of French Protestants had been established, having been driven from their own homes by the suicidal bigotry of their native land. Amongst these was the widow of Denis Papin's uncle, a Huguenot pastor. This good man had suffered in his lifetime the double misery of hostility from outsiders and suspicion from the members of his own Church; for, being a man of somewhat liberal views, he was believed to have an inclination to a doctrine of tolerance too wide even for the members of a persecuted sect. The shadow of the suspicion attached to his name rested upon his surviving widow, and even upon his children. One of the daughters was herself a widow with one little girl. It is said that she had been a playmate of Denis Papin in childhood, and it is possible that an early attachment may have been nipped in the bud by the far-away wanderings which were her cousin's lot in life. However that may be, it was probably through some family influence that the reputation of the young French mathematician was brought to the notice of the Landgrave of Hesse Cassel. This potentate invited him to take the chair of mathematics at the University of Marburg. The emoluments were scarcely larger than the modest sum that he was receiving in London, but living was much cheaper in the little German town; and it is not improbable that family affection, or perhaps something stronger, united with an innate love of wandering to determine his acceptance of the office.

At any rate, he had not assumed the position very long before he married his cousin, much to the annoyance of the Protestant pastor, who had scruples about the nearness of the connection, and a much stronger objection to the doubtful orthodoxy of the family; indeed, the marriage was delayed for some time by the difficulties thus occasioned. It is to be hoped that marriage added to the happiness of the wanderer, for certainly it very much increases his difficulties. He now became responsible for the maintenance of a considerable household, and the income of his chair did not realize even his limited expectations.

From his original pursuits, however, his devotion never varied. He was still intent upon the mechanical resources obtainable from the weight of the atmosphere, through the means of an artificial vacuum. His idea now was to obtain this vacuum by the explosion of a small quantity of gunpowder in a cylinder beneath a movable piston. The sudden explosion of the gasses generated was to drive the piston upward, and the pressure of the air on the dispersion of these gasses was to drive it down again. He constructed a model to illustrate his idea, and published a book upon the subject. But the practical effects were not equal to his expectation.

This was in the year 1688. It now occurred to him that his vacuum would be better obtained by the alternate generation and condensation of steam; and within an intervale of two years, that is, in 1690, he explained his theory.

It is difficult without diagrams to give an idea of a strange machine which has no parallel at the present day. But the fundamental notion of Papin was so simple and rude that it may, perhaps, be made intelligible in words. Imagin a cylinder of iron closed at the bottom, and with a movable piston. Water having been poured into the bottom of the cylinder, a fire is then lighted around it. The water being heated to boiling, the expansion of the steam drives the piston upward to the top of the cylinder. The fire lighted on the movable furnace is now removed, the steam is condensed, and the superincumbent atmosphere drives the piston down again to the surface of the water. The fire being once more applied at the bottom of the cylinder, steam is generated again, and the same movements are repeated.

Papin relates that though he worked with a model having a piston of only two and a half inches, the downward pressure of the air raised a weight of sixty pounds; and he calculated that a very moderate enlargement of the cylinder, weights of two thousand pounds could be raised. The movements given by a single cylinder of this kind would be discontinuous and spasmodic; but by a development of his plan, no less rude than the original idea, he proposed to employ several co-operative cylinders, and to move the fire about from one to another in succession. By another modification he moved the cylinders instead of the fire, finding this to be more practicable. How this plan was rendered practicable we can not explain, because sufficient details are not given in the papers the inventor has left. But it is certain that this was the fundamental principle of the engine by which he propelled a boat on the river Fulda a very few years afterward.

In 1695 he went to Cassel. The ostensible reason for his removal was the desire of the Landgrave to employ him upon some engineering works he had in hand. But there were other reasons which, if they did not actually drive him away from Marburg, at any rate made him glad of an opportunity for leaving. The Protestant pastor, who must surely have been a narrow-minded man, brought his controversy against the deceased M. Papin to an issue by excommunicating his whole surviving family and all their connections. Great was the scandal occasioned by this squabble among religous exiles, who stood in special need of social harmony and mutual support.

One purpose which the Landgrave had in view in summoning Papin to Cassel was to employ his mechanical ingenuity in raising water from the mines more expeditiously than had hitherto been possible. In constructing engines for this purpose the inventor made some improvements in the rough methods he had previously used. He appears to have discovered that the direct action of the steam might be available as well as the pressure of the atmosphere. In a letter to Leibnitz he says: "In addition to the vacuum I avail myself also of the pressure that water in the course of expansion exerts upon other bodies. * * * * As I believe that it is possible to employ this invention for many other purposes beside the raising of water, I have made a model of a little carriage which is moved by this force, and it acts precisely as I had anticipated. * * * * I believe that the roughness and the sharp turns of our high roads make it exceedingly difficult to perfect this invention for land carriage; but for the carriage by water I have great confidence of speedy success if I had more help than I possess."

This is a striking passage, and shows clearly enough that poor Dennis Papin was quite aware of the immense future which lay before the invention he was endeavoring to perfect.

But, alas! there remained but little future for him in this world, and that of pitiable disappointment and misery. When in England he had seen a boat propelled by revolving paddles moved by horse power. This boat was, we believe, the invention of Prince Rupert. Papin borrowed the idea of the paddles, but instead of horses employed his infant steam engine to turn them. The boat he thus constructed was undoubtedly a remarkable success, considering all circumstances. He relates with glee, to his correspondent Leibnitz, how it had been tried on the river at Cassel, in the presence of the Landgrave, and how its power was so great that it seemed to make little difference whether it sailed with or against the stream. But this was the extent of his triumph. A misunderstanding with the Landgrave about his pumping engines ripened into a quarrel which determined Papin once more to take refuge in England.

The difficulty now was how to convey his precious invention thither. If he could only sail his boat down to Bremen, he might there tranship the engines and have them conveyed to London. But for this purpose it was necessary to surmount the network of obstacles opposed by corporations of boatmen to the free passage of the Fulda and Weser. For some time Papin hoped to obtain an authoritative pass from the Elector of Hanover; but he was pressed by pecuniary difficulties, and delay became intolerable. He met with a boatman who protessed to give him a document which would secure his passage into the Weser, and, trusting to this, he embarked his fortunes and his family on board his novel craft. So far as Loch, at the junction of the Fulda and Weser, all went well. The boat ran rapidly down with the current, startling the sleeping villagers with its beating paddles, and perhaps exciting their superstitious fears by its uncanny appearance.

At Loch it was necessary to stop until arrangements could be made for a further passage. The document with which Papin had armed himself proved of no avail. The boatmen were on the alert; they insisted on the preservation of their monopoly. It is possible, and indeed probable, that a fear lest this magic engine should supplant human labor added to the energy of their opposition. In vainP apin protested. In vain he appealed to the curiosity and the sympathy of an emissary from the burgomaster of Munden, to whom he explained the fruits of his ingenuity and toil. The stolid boatmen insisted upon their rights. They required the machine to be made over to them; and before many hours had elapsed they cut the matter short by dragging the machinery out of the boat and shattering it into fragments before the eyes of its agonized maker. This blow Dennis Papin never recovered. Sending his family back to Cassel, he went, a lonely and broken-hearted man, to London, where once more he obtained subordinate employment. His genius was henceforth wrapped in clouds of descending night; and not to his eyes was it ever given to behold the rise of the brighter day which the triumphs of steam have opened to the world.—*Frank Leslie's Popular Monthly.*

John Law and the Captain of the tug Helena recently donated a load of fresh fish for distribution to the poor of this city.

DULUTH HARBOR.

The annual reports of the chiefs of engineers, U. S. A., just published, contain interesting information relative to government work upon rivers and harbors in the Northwest. From them, and from Maj. Chas. A. Allen's office in St. Paul have been obtained the principal facts in relation to the work which has been prosecuted during the past year in the important district in Major Allen's charge.

Dredging in the Duluth harbor was resumed at points where it was most needed. From the inner end of the canal, to and along the Northern Pacific docks, about 2,900 feet, and through widths of 950 to 500 feet, the main harbor was deepened so as to admit the free movement at all times of vessels drawing sixteen feet of water. The old channel, from a point near the Ohio Central Coal Company's dock to a point opposite elevator E, was also dredged, and to the same general depth as was the main harbor area. The pierhead of the south pier of the canal was renewed above the water line. The foregoing refers only to the dredging of the past season. The area dredged over by the United States since the commencement of work averages 3,000 feet in length by 850 feet in width in front of the principal docks; it does not include excavation in the blast furnace channel and along the east side of Rice's Point. The statistics accompanying the annual report show the rapidly increasing commerce of this port, the receipts of coal alone being, for—

Year	Tons.	Year.	Tons.
1881	163,000	1883	420,540
1882	254,688		

The principal work at Superior Bay during 1884 consisted in dredging between the piers at the entry and in the channel of the St. Louis river within the Bay of Superior, and in renewal, above water line, of about 1,500 linear feet of piers bordering the entry, also in protecting Minnesota Point against erosion. The dredging affords sixteen feet depth of water in the entry, and from it to the docks at Connor's Point. From the St. Louis Channel to the docks in front of the City of Superior there is also good depth of water. The statistics published with the annual report show large receipts of coal at this locality.

The improvement of the harbor of Grand Marais consists of a breakwater 350 feet in length, in prolongation of Mayhew's Point, and in enlarging and deepening the anchorage area by dredging. The work for the past season was principally confined to dredging. The least depth of water, where improvement has been undertaken, is sixteen feet. This is the only harbor of refuge on the north shore of Lake Superior. A good light is needed here; also liberal appropriations.—*Duluth Herald.*

LAKE UNDERWRITERS.

The Lake Underwriters' Association have elected the following officers for the ensuing year: President, O. T. Flint; Vice President, G. A. Tisdale; Secretary and Treasurer, E. B. Smith; Executive Committee—T. G. Crosby, Chairman; J. J. Clark, George Franklin, J. J. Higman, L. B. Fortier.

The question of classification of vessels and the publication of the Inland Lloyd's Register came up for discussion. Heretofore surveys were made by inspectors connected with the companies, or agencies engaged in underwriting. This system resulted in giving honest and correct ratings, but was open to the objection that inspectors sometimes solicited risks on the same vessels. The plan proposed and adopted at this meeting was to divide the lake territory into eight districts, and appoint nine inspectors, an extra one for Chicago. By reference to the list it will be seen that the appointments are, with two exceptions, lake captains, and men of wide experience.

District 1. Buffalo to Ogdensburg (south shore of Lake Ontario,) both ports inclusive—Samuel Shannon, master of the steamer Nyack.

District 2, Erie to Toledo, inclusive—S. P. Goodale, master of the schooner H. R. Newcomb.

District 3, from the mouth of the Detroit river to Port Huron, latter inclusive—Appointment to be made.

District 4. Saginaw, Bay City, and Alpena—Chas. McCrea, master of the propeller Russia.

District 5, east shore of Lake Michigan, from Michigan City to Cheboygan—Peter J. Kenny, master of propeller Colorado.

District 6, Chicago—John Martin, master of the steamer H. D. Coffinberry, and R. C. Gunning, Sr. formerly master.

District 7, west shore of Lake Michigan, above Chicago from Kenosha to Escanaba, including Green Bay—Angus McDougall, master of the steamer China.

District 8, Duluth and Superior City—Alexander McDougall, vessel agent.

These gentlemen have started out on their district missions, and will prosecute the work with all dispatch consistent with thoroughness. The work of compiling and classifying will be done here by a board, consisting of Captain George McLeod, Captain James J. Hardon, and Captain John Rice, with Wm. Lovering as clerk. All the companies, with the exception of the Continental, have joined in the work, and the expenses will be borne proportionately.

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Large boiler to burn wood or coal; all in first class order, suitable for fishing purposes. Will pay cash.

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Her length over all is 51 feet, breadth 18 feet and depth of hold 6 feet; draws 5½ feet of water; measures 9 24-100 (new) tons and 18 24-100 old. Built in 1880 and rebuilt this spring, new deck frames and cabin, and machinery thoroughly overhauled. Engine is 14x14, boiler 8½ feet long and 4 8-12 in diameter and allowed 95 pounds of steam. Warranted in No. 1 condition and subject to inspection. Price, $8,500 cash. Inquire at MARINE RECORD OFFICE.

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Dimensions of hull 65 feet over all, 16 feet beam, 8 feet hold, and measures 46 tons with 7 feet draft; can be made 6 feet draft. The engine, 18x20, is in first-class condition, with all new brasses, new rings in cylinder and turns a six-foot wheel, which was new last season. The boiler is one year old, is large enough to burn wood or coal and is allowed 100 pounds of steam. Price $4,500, and must be sold inside of thirty days. Address MARINE RECORD OFFICE.

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☞ IF YOU DO NOT RECEIVE MY MONTHLY LIST OF VESSELS FOR SALE, SEND FOR IT

LAKE SHORE & MICHIGAN SOUTHERN.

Commencing Sunday, May 11, 1884, at 12 o'clock noon the time given in the figures below is the new standard (Ninetieth meridian) time, which is thirty-three minutes slower than Cleveland time proper.

Eastward.	Arrive	Depart.
No 4, Fast Limited Express	*1 10 A M	*1 25 A M
No 8, N Y, B & A Express	*6 35 A M	*7 00 A M
No 20, Elyria Accommodation	†8 05 A M	
No 35, Buffalo Ac'm via Sandusky	†10 35 A M	†10 50 A M
No 35, Toledo Accom via Norwalk	†10 35 A M	†10 50 A M
No 12, N Y & B Fast Express	*1 55 P M	*2 25 P M
No 14, Special N Y & Bos Express		5 00 P M
No 2, Night Ex via Norwalk	9 40 P M	†10 00 P M
No 22, Night Ex via Sandusky	†9 42 P M	
No 26, Conneaut Accommodation	†4 25 P M	

Westward.	Arrive.	Depart.
No 1, Fast Limited Express	*11 55 A M	*12 05 A M
No 23, Mich Express via Sandusky	*2 15 A M	*2 35 A M
No 3, Chicago Express via "	†6 05 A M	6 30 A M
No 25, Mich Accom Norwalk		†6 10 A M
No 21, Toledo Ex via Norwalk	†12 50 P M	†3 20 P M
No 5, St Louis Ex via Sandusky	†12 05 P M	12 50 P M
No 9, Chi Pac Ex via Norwalk	*6 10 P M	*6 40 P M
No 31, Elyria ac to Elyria only		†4 30 P M
No 27, Conneaut Accommodation	†8 10 A M	

Sunday train for Nottingham—Depart 8:30 a. m. and 1:45 p. m.; returning, leave Nottingham at 9:05 a. m. and 3:45 p. m.

Reference marks—* Daily, † daily, except Sunday, ‡ daily, except Monday.

For full information as to trains and connections apply at the new city ticket office, corner Seneca and St. Clair streets, Lake Shore block.

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NEW YORK, CHICAGO & ST. LOUIS RAILWAY.

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Trains leave and arrive at the Union Depot, Van Buren street, Chicago, and N Y, L E & W Ry depot at Buffalo.

Following is the time in effect Oct. 6, 1884, and until further notice:

GOING EAST.	LV.	AR	GOING WEST.
			P. M.
.....	Chicago		7 50 .....
.....	Valparaiso		5 42 .....
	P. M.		
.....	Fort Wayne		1 50 .....
.....	New Haven		1 35 .....
			A. M.
.....	Leipsic		11 30 .....
.....	Arcadia		10 34 .....
A. M.			P. M.
6 50	5 00 Fostoria		10 22 8 50
7 35	5 45 Green Springs		9 44 8 05
8 15	6 20 Bellevue		9 10 7 35
10 49	9 02 AR. Cleveland	Lv.	6 45 5 01
P. M.			
12 05	..... Painesville		..... 3 44
12 58	..... Ashtabula		..... 2 51
1 42	..... Conneaut		..... 2 20
2 41	..... Erie		..... 1 28
			A. M.
4 19	..... Dunkirk		..... 11 24
			A. M.
5 55	AR. Buffalo	Lv.	..... 9 50

Through tickets to all points are on sale at principal offices of the company at LOWEST RATES for any class of tickets desired. Baggage checked to destination.

For information, call on nearest agent of the Company, or address

B. F. HORNER,
Gen'l Passenger Agent,

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New York, Pennsylvania & Ohio R. R.

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Central or Ninetieth Meridien time, 33 minutes slower than Cleveland city time.

Until further notice trains will leave from the new Central Depot, South Water street and Viaduct as follows:

7.20 a. m. ATLANTIC EXPRESS—(Daily) Pullman sleeping and hotel coaches from Leavittsburgh 9:10 a. m. to New York, Albany and Boston without change. Arrive at Meadville at 11:25 a. m. (dinner) Franklin at 12:08 p. m, Oil City 12:30 p. m, Corry 1.14 p. m, Jamestown (Lake Chautauqua) 2.18 p. m, Buffalo 5:50 p. m. Rochester 8:20 p. m.; Hornellsville 6:00 p. m. [supper]; Corning 7:25 p. m. Elmira 8:05 p. m. Binghanton 10:05 p. m., Albany 5:00 a. m. Boston 2:05 p. m.; arriving at New York 6:15 a.m.

7:20 a. m. PITTSBURGH EXPRESS — Daily — Through without change. Arrives at Youngstown 9.55 a. m., Sharon 10:55 a. m., Sharpsville 11:05 a. m., Pittsburgh 12 45 p m.

2:30 p. m. LIMITED EXPRESS—Through Pullman sleeping coach from Cleveland to New York. Arrives at Meadville at 6:30 p. m., Jamestown 8:47 p. m., Salamanca 9:45 p. m., New York 10:25 a. m.

2:30 p. m. PITTSBURGH, WASHINGTON AND BALTIMORE EXPRESS—Daily—Thro without change. Arrives at Youngstown 5:00 p. m., Pittsburg 8:00p. m., Washington 7:09 a. m., Baltimore at 8:19 a. m.

4:00 p. m. MAHONING AOMMODATION — Stopping at all way stations, arriving at Youngstown 6:55 p. m., Sharon 7:50 p. m., Sharpsville 8:00 p. m. Daily except Sunday.

11:00 p. m. NIGHT EXPRESS—(Daily except Sunday) Seeping coach from Cleveland to Hornellsville. Arrive at Meadville 3:25 a. m., Corry 4:09 a. m. Jamestown 5.07 a m, Salamanca at 7.10 a. m., Buffalo 9:20 a. m., Niagara Falls 11.50 a m., Rochester 12:58 p. m., Hornellsville, 11:00 a m., Corning 12:07 p. m, Elmira 12:40 p. m., Binghampton 2:19 p m., New York 9:10 p. m.

11 00 p. m. PITTSBURGH, WASHINGTON AND BALTIMORE EXPRESS — Wagner Sleeping Coach, Cleveland to Pittsburg without change Arrive at Youngstown at 2:00 a. m., Pittsburgh 5:55 a. m., Washington at 7.30 p m, Baltimore at 8.30 p m.

Trains arrive at Cleveland. 6:20 a. m., 10:06 p. m., 12:50 p. m., and 6.15 p. m.

☞ This is the only route by which passengers can reach Corry Elmira, Binghampton, New York City and intermediate points without change. No change to Boston and New England Cities.

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CLEVELAND, COLUMBUS, CINCINNATI & INDIANAPOLIS.

Commencing Sunday, November 23, 1884, trains of the Bee Line—Cleveland, Columbus, Cincinnati & Indianapolis Railway—will leave and arrive at Cleveland as follows, CENTRAL STANDARD TIME, 33 minutes slower than Cleveland time:

	Depart
No. 3, Columbus, Cincinnati & Ind Ex	9:00 A M
No. 23, Galion & Wheeling Express	6:00 A M
No. 9, Col., Cin., Ind. & St. Louis Ex	*6:50 P M
No. 5, Col. Cin., Ind. & St. Louis Express	*12 25 P M
No. 27, Galion & C. L. & W. Acc	3:30 P M
No. 29, Massillon & Ulrichsville Ex	4.30 P M
	Arrive.
No. 8, Col, Cin, Ind. & St. Louis Exp	*6:30 A M
No. 20, Ulrichsville & Massillon Ex	8:55 A M
No. 2, Col. Cin. & Indianapolis Express	9:50 P M
No. 12, St. Louis, Ind.. Cin. & Col. Ex	*4:45 P M
No. 22, Galion Acc	9:20 A M
No. 26, Wheeling Accom	4:15 P M
No. 4, Col., Cin. & N. Y. Express	1:45 A M

Trains marked * daily, all other trains daily except Sunday.

E. B. THOMAS, General Manager. O. B. SKINNER, Traffic Manager.

A. J. SMITH, General Passenger Agent.

CLEVELAND, OHIO.

The Marine Record.

Published Every Thursday at 144 Superior Street, [Leader Building.]

A. A. POMEROY, Editor and Proprietor.

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CLEVELAND, OHIO, THURSDAY, JANUARY 29.

THE DOUBLE LIGHT SYSTEM.

CHICAGO, January 22.

Editor of the Marine Record.

DEAR SIR:—In a Chicago paper of to-day I see where Senator Bayard is about to introduce a bill in Congress to have lake vessels carry two green lights on the starboard side and two red lights on the port side, in place of the style or system in use at present. Now I think if there is to be any legislation in this matter regulating the signal lights carried on the lakes, it might better and more understandingly be introduced by some member further west and more conversant with the magnitude of lake trade than Mr. Bayard. For, if he understood the business at all, he would never introduce, himself, or be the means for others to introduce, so confusing a system of lights as the one he advocates. When the rules governing the present system of lights are complied with they work to perfection and are simplicity itself, and, if, instead of changing them, our law makers would interest themselves sufficiently to see that all green and red lights are of the proper shade of color and brilliancy, and also properly fitted with screens to show just as the present law directs, (which is not always the case at present on the lakes,) they will do more to avoid trouble and collisions than forty such schemes as Senator Bayard's. Any observant lake man, who has gone in and out of Chicago, and beat through or sailed through the Straits of Mackinaw, or Point au Pelee passage, or among a large fleet of vessels and in close quarters, can realize the confusion that is liable to arise from such a useless combination of lights. Again I say let the present system of lights alone, but see that the law regulating them be more rigidly enforced than at present, particularly in the proper fitting of screens, which, in most cases at present, are too small.

Believing that the majority of lake men will think as I do in this matter, and hoping the double-light system will be confined to Delaware Bay, it will be advisable for you to give this communication place in your paper, and so bring this light matter before the public.

Yours truly,

JOHN HILTON.

Our correspondent has wisely expressed himself on a vital point, that of the adequacy of our present system of signal lights, as a means of avoiding collisions, if properly observed. The fact that the system is inadequate does not imply that new and questionable legislation is necessary, but that existing laws should be lived up to and enforced by the proper authorities. They should see that the lights are set and burning, that they are of the necessary brilliancy, that they are properly screened and that they are of a standard size, as large a light for a small vessel as for a large one, the latter being a point we had the honor to advocate in the MARINE RECORD of the 9th of October, last. No captain should be content to sail a boat whose lights are not clear and of positive brilliancy, and that there are no chances for sails to obscure them; that is, he should place them in their proper position, the forward rigging, as it is actually the custom for many masters to place them in the mizzen. It is indeed true that carelessness in arranging side lights, or in not placing them at all, have led to more disasters than can at present be computed and ten fold more than any fault in the present perfect system, under the law, can be charged with. A careful shipmaster avoids these faults as he would a dangerous reef, and while complying fully with the regulations concerning lights, uses every additional means of making his lights as perfect as possible. The only good point we can see in Senator Bayard's bill is made on the supposition that two lights can be seen more readily than one, that is, a more brilliant or larger light is advocated, a point already noted by us And unless the bill is amended so that it will read "Two red lights on the port side, individually distinguishable, and one green light on the starboard side," guarding against color-blindness by showing an extra light on the port side; we do not see that the present condition of things is changed a particle, except in extra trouble and cost of furnishing. Therefore, we agree with our correspondent in insisting that the bill of Senator Bayard should not prevail, but that the old law regulating signal lights should be rigidly enforced for the benefit and safety of all concerned, although Commissioner Patton, of the bureau of navigation, has recommended the passage of the bill, saying that "The subject of arranging vessel signal lights is now engaging the attention of all nations, but that before the new system is introduced upon the northern lakes the co-operation of the Canadian government would be necessary."

LAKE ERIE HARBORS.

The river and harbor bill, which has been reported to the House, and is now undergoing a final revision at the hands of the committee to correct minor mistakes, contains the following appropriations for Lake Erie harbors: Buffalo, $75,000; Dunkirk, the sum heretofore appropriated, to be used one half for the repair of the beacon, and the remainder for dredging, $15,000; also for the improvement of said harbor as recommended last week by the chief of engineers, $20,000 is provided. The Secretary of War is authorized to receive and accept for the United States from the Marine Hospital, of Erie, the title to the Peninsula of Presque Isle, at that port, as tendered by the hospital, agreeably to the provisions of an act of the Legislature of the State of Pennsylvania, and provided further that the appropriation shall not be expended until the aforesaid title deed is accepted by the Secretary of War. The amount appropriated for Erie harbor $35,000. Ashtabula, $8,500; Black river harbor, $9,000; Cleveland, $100,000. For the purpose of acquiring the tittle to the land adjoining the inner end of the west pier built by the United States for the improvement of the harbor at Port Clinton, the Secretary of War is to negotiate with the owners of the land for the purchase of the same at a reasonable price, to be approved by Congress, and if an agreement as to price can not be made with the owners, then the value of the same is to be ascertained in the mode provided by the laws of Ohio for the condemnation of land for public uses in that state, the result of said proceedings of condemnation, if taken, to be reported to the next Congress for its approval. Fairport, $5,000; Huron, $5,000; Sandusky city, $5,000; and the $10,000 heretofore appropriated to repair the existing works are to be expended in dredging the channel through the outer bar, and within the bay, which last amount is made immediately available; Toledo, dredging out the old channel $20,000, and for continuing the improvement on the Maumee $60,500, and in addition $10,000 has been reappropriated. There is also appropriated for improving the harbor at the mouth of the Muskingum river $15,000. With a view to a straight channel at Sandusky from the north end of Cedar Point to the east end of the existing channel in front of the city, the Secretary of War is directed, at his discretion, to cause a survey and estimate the cost of the proposed improvement, and report his finding to Congress.

LOOK out for Senator Vance's safety-valve bill, which proposes to repeal section 4,419 of the Revised Statutes. This provides that one of the safety-valves of a boiler and the steam registers shall be taken wholly from the control of all persons engaged in the navigation of a vessel, if in the opinion of the inspectors, it is necessary to do so. The scheme is alleged to be in the interest of a register used in the east made by the Edison Company, and if successful, will compel all western steamboats to adopt it. The adoption of the Edison register is now optional, but should the section be repealed its use will be compulsory.

THE House committee on railways and canals has decided to report favorably Representative Lacey's bill providing for an appropriation of $10,000 for the purpose of making a survey of the water route to connect the waters of Lake Michigan with Detroit river. The distance between the lake and the river is 178 miles. The estimated cost of the proposed water route is $4,754,860.

THE speed of a ship can be very closely estimated, in statute miles per hour, by multiplying the pitch of the wheel in feet by the number of its revolutions per minute and cutting off the two right hand figures for decimals, thus:

Pitch of wheel	15 feet.
Revolutions per minute	72
	10.80 miles.

THE committee on commerce has decided to report favorably a bill providing for a lighthouse at Grand Marais, after which we will respectfully ask for the completion of a harbor of refuge at that port and provisions for a life saving crew. Thus the good work goes on.

VOLUNTEER LIFE SAVING STATION.

CHARLOTTE, N. Y., January 23.

To the Editor of the Marine Record:

At this port there is what is called a life saving station. The captain of said station is a very efficient man, a good mechanic, and is always on the lookout for a job of any kind, as he is not confined to the station wholly, it not being a paid station. Now I would ask for information, what security is there for the mariners or those boating in the harbor if they meet with an accident requiring the assistance of the above? A case happened last season when J. B. Seible and Son were both drowned after 7 a. m., inside the new extension of the piers. Had this been a paid station and a patrol, or lookout, on duty, no doubt they would be living. At least some one would have known their fate. The widow of J. B. Seible holds a policy of $1,000 on his life, which she is unable to obtain for the reason that she can not prove that he was drowned. And then there is another bad point. This would-be station is located just where it should not be. Instead of its being located on the beach, either on the east or west side of the river, it is nearly half a mile from the lake, and on the west side. The view is obstructed by hotels, a growth of trees, etc. If anything happens the captain has to be notified by some one who has seen the accident, and he then must look around for a crew. If he is successful in finding a crew, all right, if not, the game is blocked. One year ago last June I was in a small yacht at the end of the pier, and half a mile in the lake was a small canoe with a Mr. Dobbins and Weaver. The canoe capsized. Mr. Dennis, the pier contractor, jumped on board and we ran out and saved them, but none too soon, as young Weaver was nearly gone. None in the station knew a thing about the accident till we brought the boys in.

I, and many others, would like to see the station either put where it can be of some use, or sold for what the timber will bring, as where it now stands, without a paid crew, it is simply of no use. The government had better appropriate the funds they are wasting on the present volunteer station here to the restoration of our land light. E.

A VALUABLE INDICATOR.

CLEVELAND, January 27.

To the Editor of the Marine Record.

Owing to the large amount of damage done to vessels and other property by reason of mistakes being made by captains in giving signals to the engineers, when working their boats in and out of port, and by reason of some of the signals adopted by captains and engineers having more than one meaning, causes me to suggest, would it not be better to have a uniform and positive code of engine signals?

The accompanying cut represents an indicator now in use upon many steamships, which is simple in its construction and positive in its action. One of these indicators is placed on the bridge, or pilot house, and the other in the engine room. Each of them is provided with two hands, which are somewhat dissimilar in their construction, and are attached to different shafts, one shaft being hollow, the other solid, and inserted through the hollow one, and are similar in their construction to the hands and shafts of a common clock. In operating these indicators, should the captain desire the engine to back, he moves the pointer on his dial to that mark, "b," as represented in the cut, which, by means of small wire rope attached to the shaft of the indicator, and running to the drum of the engine-room indicator, causes the hand of the latter to point to the same mark, as in the accompanying diagram, at the same time striking a bell which is enclosed in the case of the indicator, back of the dial, which attracts the engineer's attention. The engineer repeats the signal by moving the hand of both his and the captain's instrument to the same mark as indicated by the captain, thereby leaving no room for mistakes. To illustrate, there are many of our lake steamboats worked by such signals as these:

One bell—Go ahead.
One bell—Stop.
Two bells—Back.
Three bells—Check.
Two bells—Work stronger.
Four bells—O. K.

It will be seen by this that in two cases the same signal has two meanings, which gives room for mistakes to be made, often with serious results.

The letters on the dial of the indicator are rendered as follows: On one side, "A," go ahead; H. S., go ahead at half speed; F. S., at full speed; and on the other side "B." back; H. S., back at half speed; F. S., back at full speed. When both hands stand at S. or zero, it is supposed that an order has been given to stop. M.

ABOUT QUICK TIME.

Editor of the Marine Record:

I notice some fast time by upper lake flyers. First, I would ask how a vessel the size of the King Sisters can sail all the way from Marquette to Detroit, we will say from Whiskey Bay to the Detour? We often speak of the fast time we make under canvas, but would it not be well to allow a little to the tug and tow line? The schooner Pennsylvania, of Clayton, N. Y., left that port the 25th of April, 1842, for Ogdensburg, went to Oswego and discharged her cargo of lumber, then to Hamilton, Canada, for a cargo of stones. She made three trips from that point to Clayton, and was then ordered to Cleveland. She made eight and a half canal trips, nearly all to Kingston, and nine and a half Lake Erie trips to Buffalo. The Lake Erie work was done from Cleveland and Sandusky, with wheat and flour, and discharged with the crew, in canal boats. The remark will be made, "But see the size of the vessel." We admit that, but see the size of the canal, no night towing and no tugs. Then masters and mates towed the ship. What I have said can be proven by Messrs. Merrick & Esseltyne, now in Detroit. I would like to see that time beaten, under the same circumstances; no tug, no elevators, and the crew doing the work in discharging the ship. E.

THE MARINE ENGINEERS' BALL.

The fourth annual ball of the Marine Engineers' Beneficial Association was held at Langberg's hall last Thursday, the 22d instant, and was enjoyed by fully seventy couples. The order, of which the Cleveland association is a part, is very extensive, and its members are found wherever the steamboat is an essential to commerce, on the ocean, lake, or river, and in all parts of the world. Although it does not deal in an aggressive way with the wage question, among its members are numbered the best posted men on mechanical engineering that can be found in the country and who receive all the benefits that are due to a strong and courteous organization of intelligent men. The programme for the dance, each number being designated in a characteristic way, (named after some favorite steamer or firm) was long, and afforded exercise for the dancers until daylight. An elegant collation was served at the proper time, when all were hungry, in the large banquetting hall adjacent to the ball room. Taken altogether, it was the most enjoyable party of the season. The business committee consisted of Messrs. E. W. Prince, Q. Miller and J. T. Mead; the reception committee of J. Smith, Wm. Seamon and Wm. Kennedy; the supper committee of Warren Tilten, C. R. Davis, John McAchern; sergeant-at-arms J. T. Mead; floor directors, O. N. Steele and John Aiken; and floor managers, John Thompson, D. W. Johnson, James Chase, and N. A. Lloyd. Many visitors were present from other ports.

LITERARY NOTICES.

THE FEBRUARY CENTURY, of which 180,000 copies will be printed for the first edition, contains several interesting and valuable additions to the War series of papers, recently begun, including General Grant's long looked-for article on the battle of Shiloh, which is accompanied by a number of portraits and other illustrations, and maps, and a paper, from the Confederate point of view, contributed by Colonel William P. Johnson on the same event in the great war. In this number of the Century is the beginning of what promises to be an absorbing novel by Henry James entitled "The Bostonians," which characterizes a group of strong-minded people of both sexes. The papers on Canadian Winter sports, by Dr. Beers, with spirited illustrations, will be much enjoyed by lovers of out of door sports. The other notable features are Mark Twain's "Royalty on the Mississippi," with humorous illustrations; the Rise of Silas Lapham, and the serial entitled "The Knight of the Black Forest," the concluding chapters of which are contained in this number.

HARPER'S MAGAZINE for February is an unusually interesting number, beatifully illustrated. The frontispiece is an engraving by King from F. S. Church's painting, "The Mermaid and the Sea-Wolf." The illustrated articles embrace a wide variety of subjects—interesting to the student of history, of biography, of science, and of art, as well as to the general reader. The leading article is a description of Hatfield House, the home of the Marquis of Salisbury; and an interesting contribution is a biography of General Richard Montgomery a young hero of the revolution, which constitutes a remarkable romance. The most remarkable of the illustrated papers is that by Dr. Richard T. Ely on Pullman City, a timely social study, and is a strong argument that laboring men should acquire a home for themselves. Miss Woolson's "East Angels," presents some charming pictures of Florida, and the readers of the annymous novel, "At the Red Glove," will enjoy the quaint humor of Captain Loigerot's wooing. Other bright stories and historical matter, sustained by timely and strong editorials make a most valuable number.

IN THE ATLANTIC for February "A Marsh Island," by Miss Jewett, occupies the place of honor, followed by the "Prophet of the Great Smoky Mountains, by Mr. Craddock, who succeedes in getting his hero and heroine into a good situation despite the old adage, often quoted, therefore omitted here. All of the serials began in the January Atlantic are exceedingly interesting and present many striking episodes. Included in the features of a more profound nature are an account of the revival of interest in antique sculpture after the neglect of the dark ages; the "Quest for the Grail of Ancient Art, and a continuation of Dr. Holmes' charming papers. A crisp and pungent criticism of "Nathaniel Hawthorne and His Wife," reviews of "Montcalm and Wolfe; and of other volumes, with the usual books of the month and the Contributor's Club complete an excellent number. Houghton, Mifflin & Co., Boston.

ST. NICHOLAS—A new serial, "City or Country," opens in the February number of this bright monthly, by presenting and solving a problem that is of interest to all denizens of a crowded city. Gail Hamilton, in an unusually happy vein, presents the history of England, or the successive reign of the English soverings, in easy verse accompanied by portraits, which will be enjoyed. Mr. Palmer Cox continues the immitable picture stories of the Brownies, which have proved such favorites with the little folks. He takes the Brownies, in an ingenious way, from exile to their native land. In the serials, Davy and the Goblin visit Robinson Crusoe, and the hero with but one fault gets into more trouble, for after having found Dandy Jim, he rides another horse home.

[*Continued from 1st Page*]

GRAND HAVEN.

The condition of the ice-bound steamers remains the same. The Oneida lies off Montague in distress, the Wisconsin is in this port, and the Michigan just outside our harbor: The tug Arctic broke the ice to within seventy feet of the Michigan, and within an hour would have been alongside, and the steamer could have come in, but by order of the railway company the tug was withdrawn at 3 o'clock. The Wisconsin is ready to go to the Oneida with fuel for her. Work is greatly delayed in freight business here. The company should have a large tug of their own here, then all trouble would be obviated. The 2d engineer of the Michigan was badly burned by an oil explosion on the 27th.

The following is a list of craft in winter quarters at this port.

Schooners.

C. E. Wyman,	W. Loutit,
Presto,	Driver,
R. Howlett,	D. Macy,
A. Savadge,	E. Bates,
Eveline,	A. Jackson,
Hope,	S. M. Dugle,
Apprentiss Boy,	Wolverine,
Transfer,	City of Grand Haven,
Rapids,	Erie,
May Amanda,	Ottawa.

Propellers.

S. H. Pickands,	Tempest,
Frank.	F. A. Cummings,

Side wheeler.

City of Milwaukee.

Tugs.

Arctic,	G. Batchler,
D. Robertson,	G. W. Johnson,
Pearl,	Ogle,
T. W. Ferry,	Kaiser William,
Claud,	S. Edwards,
G. Stickney,	J. Torrence,
Alice,	H. E. Reeves,
J. Gray.	D. R.

OSHKOSH.

Special to the Marine Record.

We have the following list of craft in winter quarters at this port:

Steamers.

John Lynch,	O. B. Reed,
Leander Choate,	B. F. Carter,
Evalyn S. Neff,	O. Cook,
K. M Hutchinson.	

Tugs.

No. 3,	W. W. Neff,
M. D. Moon,	Lone Star.

Schooners.

Caroline,	Forward,
Minnie,	S. B. Page,
J. H. Porter,	Flora,
North Star.	

Steam yachts.

Nellie Noyce,	Albina,
Coquette.	

The steamer B. F. Carter is on the dock for a recalking, the schooner S. B. Page for a general overhauling, and tug No. 3 will have new topsides and decks.

The contract for a new steel boiler for the steambarge S. Neff was let to M. T. Battis, to be completed April 1st.

Alex Burns has a new steel steam yacht 30 feet long and 7 feet beam, nearly completed.

Dr. Noyce and A. W. Farrand are building a steam yacht 24 feet long and 6 feet beam. Byron Bros. are building a schooner 80 feet long and 18 feet beam for Bent Bros., to be used in freighting gravel, sand, stone, etc.

The steambarge K. M. Hutchinson is having her pilot house enlarged and a fore-and-aft hog chain put in. The steambarge O. Cook will be docked in the spring to receive new wheels and sundry repairs. S. N.

KINGSTON.

The corporation will proceed against the M. T. Company to recover $2,000, it being claimed that the company violated the conditions of the agreement which governed exemption.

Captain Lewis has purchased the schooner Oriental from Calvin & Son The price is not given. The Oriental is 375 tons burden, was built at Garden Island by Rooney in 1867 and hails from Kingston.

DETROIT.

Special to the Marine Record.

Jan. 26.—A gentleman who arrived here last evening from Grand Haven reports two of the steamers plying between Milwaukee and Grand Haven ice-bound in Lake Michigan and in imminent peril. During the late autumn three steamers were commissioned to ply on this route during the winter term. These were the Oneida, Wisconsin and Michigan. The Wisconsin is at present shut in at Grand Haven and unable to leave that port. The other two are out upon the lake, helpless, and driven by the direction of the winds and force of ice. The Michigan is in view, but at a considerable distance, while all efforts to afford her any relief have thus far proven futile. The whereabout of the Oneida is not known. When last seen she was being forced out into the lake and leaking badly. Both ice bound boats have, for the time being, a sufficiency of fuel and supplies for those on board, but a continuation of the present cold weather can not but bring them to close quarters, to say nothing of the danger of being cut through by ice and going to the bottom, as has been the case in previous instances. The tug Arctic, at Grand Haven, is laboring hard to reach the Michigan, but thus far all to no purpose, and it is now conceded that the only hope for the distressed steamers is a shift of wind. The route during the winter months is attended with much hazard, and were the losses and damages footed up since its origin, would amount to a large sum. The propeller Lac La Bell, of 857 tons, foundered while crossing in 1872, and the Ironsides, also a splendid craft of 934 tons, foundered in 1873, and went down with twenty-four lives. Many other craft, not connected with the route, have been either totally lost or severely damaged.

The propeller Oconto, in winter quarters at this port, at the foot of McDougall avenue, took fire a few nights since, from some cause unknown, and was damaged to the extent of $600. Her repairs are being made good.

The new steamer in process of construction at Wyandotte for the Detroit and Cleveland line will be named the City of Cleveland. The steamer of that name belonging to the same line will be renamed the City of Alpena.

The Detroit and Windsor ferry steamers are not only roughing it this winter, but are receiving rough usage, owing to the formidable attitude of the ice and great danger in coming in contact with it. The Victoria, on Thursday last, was compelled to haul off, in consequence of her iron sheathing being torn off in one or more places. These boats make hourly trips, and, as a result, the receipts do not meet the expenditures.

Probably the most important admiralty case ever before the United States District Court in this city had its beginning Friday morning, the call being that of the Alberta and Osborne collision, which occurred July 27th, last, off White Fish Point, Lake Superior, the Alberta being the defendant on trial and the sum involved upward of $90,000. Eminent counsel are employed and the court room is crowded by interested listeners, to say nothing of the hosts of witnesses and experts for the occasion, including many captains. It will doubtless occupy the whole of the present week, if not longer, and the decision be proclaimed after the usual red tape fashion, some time next summer.

The schooner Cheney Ames was seized on Friday last by a United States marshal at this port, on a claim for supplies amounting to $200, due Upson, Walton & Co., of Cleveland.

Ship broking at this port has, within the past few days, been undergoing a change, and two firms, it is presumable, will become extinct. Morgan & Rice have dissolved, the former retiring from the business, while the latter may at present be found in Parker & Millen's office, Griswold street. Captain J. M. Jones, for some time past a well known vessel agent and broker, has received the appointment of city assessor, and beyond a doubt will be confirmed as such by our city council, as the nomination is conceded on all hands a good one, placing the right man in the right place. This will cause two vacancies in the ship broking line, notwithstanding there are a few more left.

There is an usual quietness among vessel men here and nothing doing in the way of buying and selling. They meet each other, it is true, and look askance, but mum is the word: "Anything bite you to-day?" "No!" "Vell, nothing bite me, too," and this is about all, while no one knows what the storm may portend.

There are an unusual number of visitors in town at present, but are those attending the great lawsuit, and to name all would occupy the space of a large hand bill.

Everything is quiet, even to the market quotations Flour, best quality, $5.25; wheat, 88¼ cents; corn, 43¼ cents; mess pork, $12.50; mess beef $10.25 per barrel; butter, 25 cents; eggs, 20 cents, and so on ad libitum. But let us go back fifty-two years and make some quotations, and take the month of September, 1832, which were as follows: Flour, superior, $5; flour, fine, $4.50; corn, 56 cents; wheat, $1; mess pork, $14 per barrel; mess beef, $6.50; lumber, seasoned clear, $12 per M; lumber, common, $10 per M; shingles, $1.75; white fish, $6, per barrel; butter, 12 cents per pound; eggs, 18 cents per dozen; whisky, 28 cents per gallon; hard wood, $1.25 per cord. I quote whisky, as at that time it was a common staple of life, and instances of hanging for stealing very rare, and if ever, hardly ever.

At present I am having a battle with bursted water pipes and the thawing out of others, and consequently forbear making any comments on the weather, but if there is no let up soon you will hear from me very pointedly on the subject. J. W. H.

OGDENSBURG.

The river and harbor appropriation bill gives Ogdensburg $10,000 for the improvement of the harbor.

The News says the steambarge Reliance, owned by the Rathbun company and commanded by Captain John Flynn, delivered in Oswego during the season of 1884 eighty-three cargoes of lumber from different ports in Canada, the greatest number of cargoes delivered there by any one craft in any one season from the above ports.

MT. CLEMENS.

Special to the Marine Record.

The towbarge being built for the Tonawanda Barge Line is progressing very fast, the plank being half on, and the rest will be on in about thirty days. The calkers who commenced work were obliged to suspend on account of the extreme cold weather.

Engineer Muehle has completed his work at the mouth of the river and transferred his party to the Flats. Mr. Muehle surveyed the river channel from Catfish channel, about 100 rods below Belvidere, to the pier. He finds deep water to within 800 feet of the club house, where the shoal begins, and from that out the channel is not good. His report will recommend the construction of a revetment from a point just within the river to the last pier, a distance of 3,280 feet. It is proposed to plank this strongly, throw the excavated mud behind it, and with the aid of willows construct a permanent bank. This could be done for $15,000, and would result in a deep channel that the north current could not touch and would not in any way affect. The mattrass protection is not satisfactory.

The work that Mr. Muehle is now engaged in on the Flats points to an extension of the ship canal southward a distance of not less than 2,000 feet. The powerful current through the canal has piled up a formidable bar at its mouth, extending probably 4,000 feet into the lake. To give a vessel a free passage, this will all have to be dredged.

The collector of customs is preparing an exhibit of the river's business for the benefit of the department. G. L.

MARQUETTE.

Local inspectors of steam vessels, Blanchard and Gooding of Marquette, have the following item in their report for 1884 which embraces the Lake Superior district. Steamers inspected 91; officers licensed 317; graded as follows: Masters 40; pilots 115; engineers 162. The 91 steamers carried 144,542 passengers without the loss of a single one. The loss of property by marine disasters has been $275,000.

The schooner Starkey, of Milwaukee; the scow Mystic, of Marquette; the river tug Gladiator and harbor tugs Adams, Gillett, Dudley, City of Marquette and Rose and a large lighter belonging to Mr. Gillett, are laid up at this port.

AUXILIARY SAILS.

LOCKPORT, January 24.

To the Editor of the Marine Record:

In my writings I make the assertion that naval architecture, as practiced, is not a science, also that principles of sailing are not scientifically understood, and give many points to establish those facts. The best evidence that I am right is from the fact that no one disputes the points I put forth, or offers any argument against them. The only argument ever offered by experts in the craft is the question many times asked, "if all noted experts have been wrong?" Are not the points in my last well put, or, can they be disputed? Do any of the noted experts give such points? Do not the many thousand disasters annually prove that their opposites, now in use, are wrong? It did not need much science to build an old-fashioned stage-coach, yet more was used in their construction, so far as principles of stability are concerned, than is used in building a ship. But we now have substituted for them locomotives. To build these it requires a great degree of science, and the man who run a stage-coach could not run a locomotive. This is "what's the matter." The principles which build old-fashioned sailing vessels and the men who use them are not qualified to build vessels for auxiliary sails and steam, any more than the old stage builders would be able to build a locomotive, and the men who run them no more than the old stage driver could run the locomotive. Safety now demands that locomotive drivers must pass an examination and be qualified for their duty. Safety, in the future, will demand that crews for ocean vessels must also pass an examination before they will be allowed to ship for a voyage. Sailors, then, will be a more respected class of men. I was, on the 17th inst., 74 years old. My life has been said by others to have been an experimental one, but I do not view it in that light. I have devoted it in developing theories where they were needed and none were in use. It is a lamentable fact, but very little is known about the true principles which govern sailing. Prior to 1868 I had given much time to theories by which sails could be under complete control. I had in view particularly, at that time, theories which would lay a vessel too nearly head to the wind and hold her there, or allow her slowly to work to windward. When I had the the theory perfected I built an able boat to test it. These were the points involved: First, to have a hull which would not pitch; second, a hull most buoyant and one which needed no ballast; third, a hold on balance which would hold her in position such as would be desired at different times. I will say of my boat that she performed in perfection just as I had designed her to do. She had on her a good, comfortable cabin, and I lived on board of her one season, with only a boy to help me. The Hook at Hull, off Boston, was, and now is, the home of yachts. It is the best of anchorage at the Hook, and yachts lay there from all ports, at anchor. I would come in most every day with my boat, "luff up" and lay there with my sails up and no anchor down; did so for months, and in that time not one amateur sailor inquired the reason why the boat would lay there. We would cook and eat our meals in the cabin and pay no attention to the boat. There was one incident in the course of the summer worthy of note. It was on Sunday. That day I had my boat at the wharf with her sails set, but when I left her I always arranged her hold on balances, so that if she got loose she could not get away. At the wharf she was in the lee, and no wind could strike her sails, but the tide was running out at the time, and if she got loose it would soon have taken her out into the wind, and then she could go no farther. There was no other boat of any kind at the time at the wharf, and some wags cast her off and came and told me that my boat was adrift. I knew that as soon as she had reached the wind she would take care of herself, and she did so. Pilot boat No. 14, of New York, was on a visit to Boston and lay at anchor in the Hook. my boat came too to leeward of her, and they sent their small boat and put their mate aboard of her to take care of her and keep her from going out of the gut, as they supposed she would do. In the meantime a small row boat came to the wharf and took me off to my boat. The mate was trying to sail her but could do nothing with her, could not get her away. As soon as I was on board I touched the hook spring which held her hold-on balance, and she was off like a bird, and in one short hitch I put the mate on board of the pilot boat. He was a good sailor. I explained to him the cause. He was enthusiastic on it as soon as he saw the principles. This shows that the best posted sailors are not well up in principles. When I returned to the wharf one of the yacht captains, the one no doubt who had cast her adrift, remarked to the people on the wharf that she was a crazy man's boat, and that one of the best of pilots could not sail her. But they had all seen that she was instantly in motion, as soon as I got on board of her. And as long as that pilot boat remained in Boston, which was about two weeks, they kept my boat on the go.

I will say of this movement of laying-to that in coming-to you change the hold-on balance with your sheets hauled close aft. Of course she will fall off a trifle, and her sails then and immediately and instantly throw her on the opposite tack. She is always ready for an instant start on one or the other tack as soon as the balance has been restored, which is done in an instant, by simply pressing on a spring. The balance can be so graduated as to allow the boat to come to a standstill, or, to allow her to forge ahead. This is only one of the multitude of principles which govern sailing, but is a valuable one, which will do away with drags and laying-to and can be done in extreme high winds without danger to the sails, as but slight strain is brought to bear on them when compared with laying-to. In fact, the vessel, when in that position, is the same as on a pivot under her center, and the instant she meets strain on her sail it causes her to swing on that pivot until strain is met on the opposite side. But the vessel can not make lee way or drift. More anon.

Yours truly,

JOSEPH W. NORCROSS.

THE NEW ENGLAND SHIPBUILDING INDUSTRY.

Special Correspondence of the Marine Record.

BATH, MAINE, January 24.

A visit to the cradle and birthplace of our once-famed clipper ships would lead a casual observer to suppose that although many have predicted wooden ships were about retiring, to give place to those constructed of iron and steel, timber for constructing vessels will be used for many years to come. Bath vessels have won an enviable reputation for themselves throughout the world, not only for their great speed and good seagoing qualities, but also for excellent model, handsome appearance and excellent workmanship displayed in their construction. Aberdeen, Scotland, was the home of the winged racers of the seas in the days when British shipowners competed for the tea carrying trade between China and Great Britain, and many a hot contest was engaged in between the Yankee ships of New England and the "lime juicers" of old England, but the honor of having made the fastest passage, either from Hong Kong, or Shanghai, or Japan, to London, were oftener won by the clipper carrying the stars and stripes at her mizzen, than her which floated the blood and thunder of St. George. Bath always has been and always will be the home and center of the wooden shipbuilding industry of the United States, not so much from any natural advantages she possesses, but because of the enterprise and business ability of her builders and managers of vessel property. The names of such men as Goss, Sawyer, Packard, Sewall, Houghton, Roger, Moore, and many others, are known throughout the commercial world.

In 1845 Bath entered upon the business which has won for her more than a national reputation. At that time it had dense forests of wood to draw from for material, but these have long since been exhausted, and it is a remarkable fact that the Bath of today has the cream of the business while every dollar's worth of material has to be imported from a distance. It was not until 1841 that large vessels began to be built. In the spring of that year Clark & Sewall created a sensation in the maritime world by building the largest merchant ship afloat, the Rappahannock (nicknamed Rapping Hammock by sailors,) of 1,183 tons net register. Nearly a decade passed between her birth and the launch of another monster ship. It was in 1840 that the Houghton Brothers built the Northampton, of 1,000 tons. In 1851 the cotton trade demanded large ships, and vessels of a thousand to fifteen hundred tons were built. About 1864 the California wheat trade called for vessels yet larger, until ships of from two thousand to twenty-five hundred tons net register are now built, they being the most profitable for this branch of the world's carrying trade. Although large three and four masted schooners have long been in use on the great lakes, Bath took the initiative in building the mammoth fore-and-afters of the present day for sea going. The first four-masted schooner ever built for ocean service was built here. She was the Wm. L. White, of Taunton, Mass., of 1,000 tons register, to carry 1,500 tons of coal. (Lake-faring people are familiar, no doubt, with the five-masted barkentine David Dows, of 1,500 tons net register, built by Bailey Bros., at Toledo, Ohio, in 1881, the first and only sailing vessel of that rig ever constructed.)

One of the best equipped yards in Bath is that of William Rogers His Daniels planer will handle a stick of timber 55x5 feet, and 30 inches deep. He has also machines for bevelling timber, etc. Among the large ships he has built may be mentioned the Charmer, Abner Coburn, (named in honor of ex-Governor Coburn,) and the Kennebec, of 2,125 tons register, his largest ship. She was launched in 1883 and cost $120,000. In October, 1883, there was launched from the yard of Hitchcock & Blair the ship S. P. Hitchcock, of 2,177 tons register, for Isaac F. Chapman & Co., of New York, at a cost of $130,000. Chapman & Co. calculate to have a ship built for themselves yearly, and the Albert G. Rogers, launched last November, is the finest of their fleet. She is 2,340 tons register and cost $130,000. Her general equipment is not excelled, and among her many time and labor saving inventions might be mentioned the Providence windlass, made by the famous American Ship Windlass Co., whose capstans and windlasses are so well known throughout the marine world.

The New England Shipbuilding Co., of Bath, have the largest establishment for wooden shipbuilding on this continent. Its managers claim, that with its unsurpassed facilities they can build a 500 ton schooner in sixty, and a 1,500-ton ship in ninety days. The company was incorporated last February with the Hon. Guy C. Goss as president, and a capital stock of $300,000. The plant, estimated at $150,000, includes the yards, a marine railway, which will haul up a vessel of 1,200 tons, and machinery for sawing frames operated by a 50 horse power engine. The concern requires 500 men when they are in full operation. The first vessel built by the new company was the three-masted schooner Wm. B. Church, of 800 tons, for Chas. W. and Joseph H. Church, of Taunton, Mass. Her cost was $50,000. Last August they launched the auxiliary steam barkentine Morning Star, built for missionary purposes in visiting the South Sea Islands, at a cost of $45,000. They are now at work on a 1,000-ton steamer for Theodore Phipps & Co., of Boston, to be off in March, also the steamer Cumberland, of 1,500 tons register, for the International S.S. Co., of Portland, Me., at a cost of $170,000, to be launched in May. Before Goss, Sawyer, Packard & Co. consolidated their interests in the New England Shipbuilding Co., they built a great many vessels, both large and small. Among the latter was the Henrietta J. Powell, a spruce schooner of 323 tons, for J. W. Adams, of Philadelphia, at a cost of $18,000, which was considered very cheap. Their largest ship was the John R. Kelley, of 2,255 tons register for Captain John R. Kelley, of Bath, costing $121,000.

This firm was the first to build auxiliary steamers, (or compound ships, as some call them.) The steam bark Mendoza, for the Buenos Ayres and Montevideo trade, being the first and the George S. Homer, for the Portland, Oregon, canned fish business, the second. They also took advantage of a patented invention by which the two-bladed propeller could be fixed rigidly up and down the stern post while under sail, by means of a very ingenious looking gear. This novel piece of mechanism is now used in all vessels of this type, also the iron mainmast utilized for a smokestack without interfering with the sail carrying capabilities of the mast. (This araangement would answer well on such a vessel as the steam schooner J. W. Wescott, built about two years ago by the Messrs. Holland & Alexander, of Bay City, Mich.) Among the most successful of these auxiliary steam schooners has been the Jessie H. Freeman, of 500 tons, built by Goss & Sawyer for the Standard Steam Navigation Company, of Boston, to run between that port and Kingston, Jamaica, for fruit, etc. This vessel makes ten knots under steam and can do the run in less than a week from harbor to harbor. The four-masted auxiliary steam schooner Walker Armington, of 1,000 tons net register, built by the same firm for the Cuba sugar trade, is another of the good-paying vessels of this type. She cost nearly $75,000 and has an engine of 175 horse power, which consumes less than three tons of coal per day. Last March they launched the three-masted steam schooner Lorenzo D. Baker, for the West India fruit trade. She is fitted with two independent engines. One is for hoisting sails or cargo, or for pumping ship, the other drives the windlass. In the fall of 1883 they launched the steam whaler (bark) Thrasher, built to the order of J. H. Knowles, San Francisco, for use in the Arctic oil fishery; also the ship Ben. F. Packard, of 2,000 tons register. Last spring they launched the steamer Alki, for the Oregon Southern Improvement Co., to ply between San Francisco and Empire City, Oregon. She was 600 tons register and cost $60,000

John McDonald, a native of Picton, N. S., with Ben Flint, of Bath, launched last fall the largest bark-rigged vessel ever built, the St. James, of 1,500 tons net register, cost $100,000. He also launched, soon after, the largest ship ever built in the State of Maine. This great ship was the Henry B. Hyde, of 2,468 tons net register, upon which 5,000 spectators gazed last November, before she was fitted for sea. Her dimensions are: Length, 268 feet; beam, 45 feet; hold 29½ fee , and valued at $140,000, which includes donkey engine, fresh water condenser, etc. Her patent Providence capstan windlass is the largest ever made for a sailing vessel.

The firm of Sewall, began in 1823 by Wm. D. Sewall, is now carried on by Arthur Sewall & Co. This concern has built eighty vessels and now own over 20,000 tons of vessel property, including such ships as the W.F. Babcock, 2,120 tons; Undaunted, Occidental and the John Rosenfeld, of 2,270 tons register. She carried 3,700 tons of coal from Baltimore to San Francisco on 25 feet draft of water. Her cabin was most elaborately fitted in cherry, and bird's eye maple, by Rand & Taylor, of Boston. They have now on the stocks a four-masted ship of 2,550 tons net register, which will be the first vessel of that rig ever built in Bath and the largest ship Maine has ever sent forth. Her dimensions are: Keel, 260 feet; beam, 45 feet; hold, 28½ feet; capacity, dead weight, 4,000 tons on 25 feet. She will be launched in the middle of April at a cost of $125,000, and will be owned mostly by the builders. (The four-masted ship Ocean King, of Boston, built by Henry Sears in 1874, is the only Yankee ship afloat with four spars.)

B. W. & H. F. Morse, who combine an extensive towing business on the Kennebec with their shipbuilding, confine their operations mainly to the building of coasting vessels of the larger class. Their largest vessel was the three-masted schooner A. Hunt, of 1,200 tons net register, which carries 1,900 tons of coal from Philadelphia to the Boston Gas Co. Last summer the firm built the tug Seguin, of 100 tons register, with a 20 foot beam, 9 feet draft, and a speed of twelve knots, with steel boiler carrying ninety-five pounds of steam. She was for the Knickerbocker Steam Towage Co., which owns ten tugs. Her cost was $20,000.

In addition to the ships and coasters built at Bath there are also a great number of fishing vessels and yachts turned out by three firms, which devote all their time and attention to this particular branch of naval architecture and marine construction. Perkins & Blaisdell build small steamers. Chas. B. Harrington devotes himself to yacht building. F. M. Hagan & Co. almost make a specialty of building fishing vessels. Last year they built a beautiful fishing schooner called the Phelo Manta, for Captain Manta, of Cape Cod, valued at $7,000. She had an oak frame, with hard pine planking and ceiling. Another handsome vessel was the schooner Grace F. Littleton, for Grand Bank fishing, and owned by Philip Orth, of Provincetown: Length, 100 feet; beam, 25 feet; hold, 10 feet; net tonnage, 160, costing $15,000. Deering & Donnell built the fishing schooner Laura Bell last year for James D. Spraker, of New York, to be employed in connection with the Fulton Market, also Lucy A. Dyer, for Chas. A. Dyer of Portland, Me., for cod fishing on the banks. Just before the close of 1884 the firm began work on a fishing schooner for Lincoln & Allen, of Portland, Me., worth $7,000. She will be 100 tons register and is to be launched March 1st. These firms are fast gaining the orders which were formerly given to builders of fishermen at Essex, Mass., owing to the superiority of the Bath built vessels over those turned out by Gloucester, Mass., builders. All the Grand Bank fishing vessels use 7-inch manilla rope hawsers of from 400 to 500 fathoms long on the port side, for anchoring in deep water, and only 100 fathoms of one-inch chain cable on the starboard side, for anchoring in shallow water, *i. e.*, harbor use, where the dirty and slimy muddy water would rot the rope if it were used.

The condition of shipbuilding in Bath today is very dull compared to what it was a few years ago, but the builders are quite hopeful that in the near future the tide of prosperity will return and their yards be again filled with the great white-winged carriers of the sea.

In anticipation of the change from wood to iron, the Goss Marine Iron Works was organized about two years ago, to construct metallic vessels. But, although they have turned out some fine marine engines, iron and steel boilers, etc., they have not yet been able to secure an order for an iron vessel. They expect, however, to be able to secure a contract for building a small iron schooner before spring, to start upon, after which they are sure of getting some larger orders, providing freights are more remunerative to the shipowner than they have been all winter.

G. FOSTER HOWELL.